Not for Publication
D-68-14
November 1968

OAK LEAF TIER EGG SURVEY

MONONGAHELA NATIONAL FOREST, 1968

By

WILLIAM B. WHITE, ENTOMOLOGIST

NOVEMBER 1968

Delaware Forest Pest Control Field Office
USDA - Forest Service
PO Box 365, Delaware, Ohio 43015

ABSTRACT

Results of an oak leaf tier Croesia semipurpurana egg survey indicate that scattered light to heavy defoliation may occur over 175,000 acres of oak on the Greenbrier and Marlinton Ranger Districts, Monongahela National Forest, in 1969. Defoliation in the red oak type is predicted to be heavier than the moderate defoliation which occurred in 35,000 acres in 1968.

INTRODUCTION

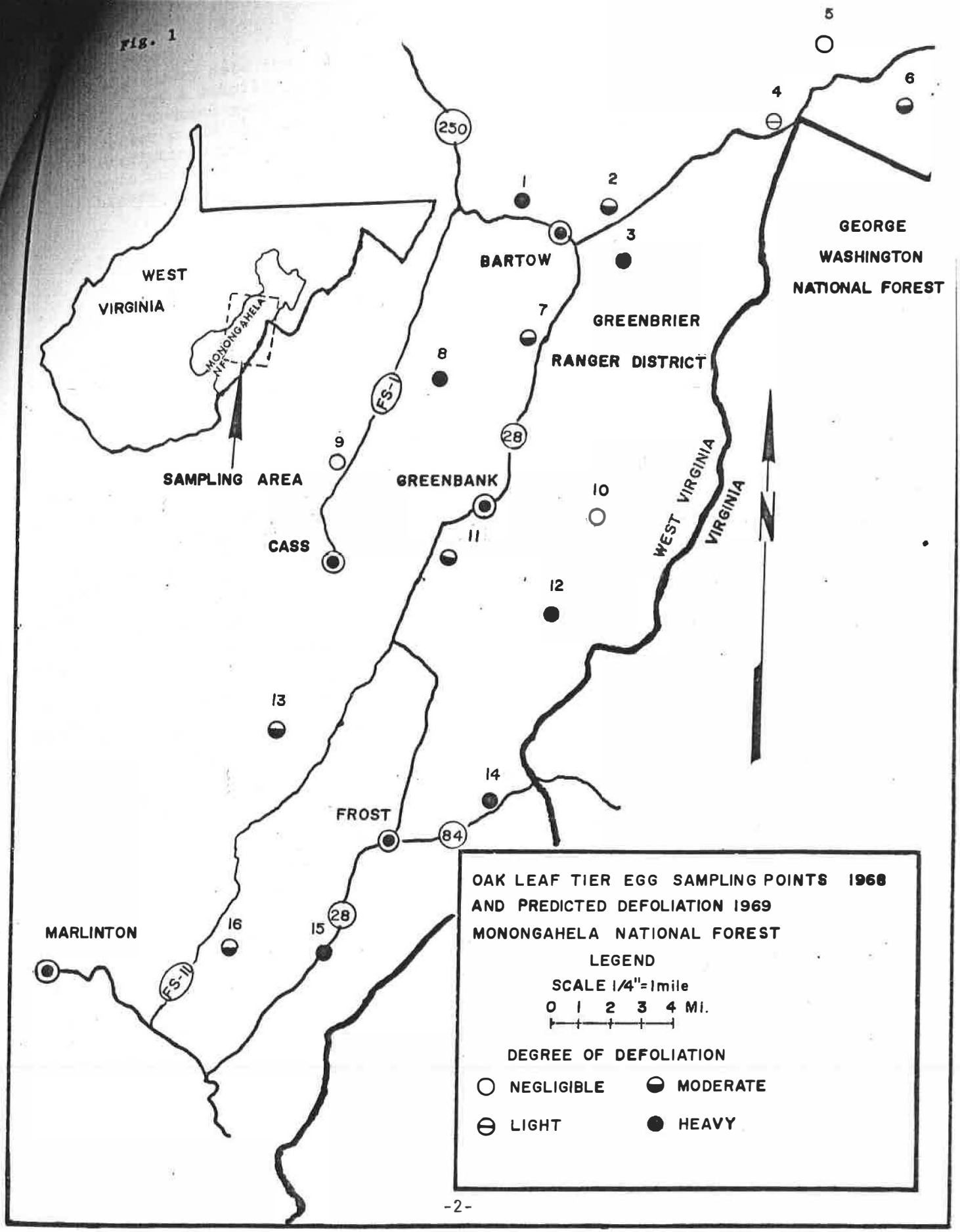
An egg survey for the oak leaf tier Croesia semipurpurana (Kearfott) to predict 1969 red oak defoliation was conducted the week of August 5-9 on the Greenbrier and Marlinton Ranger Districts, Monongahela National Forest, by the Delaware Forest Pest Control personnel (Fig. 1). The results of this survey were used to predict the extent and intensity of oak leaf tier defoliation and the effect this activity may have upon infested oak stands.

The oak leaf tier was first noted in outbreak proportions on 35,000 acres of the Greenbrier Ranger District the summer of 1968 during an aerial detection survey over the entire Forest (White 1968). The insect in 1966 caused wide-spread defoliation on the adjacent White Sulphur Ranger District (Gillespie 1966, Freeman 1966). Insect defoliation coupled with adverse environmental factors resulted in heavy red oak mortality on the White Sulphur Ranger District. This combination of interrelated factors leading to eventual mortality is known as oak decline. A similar problem is possible on the Greenbrier and Marlinton Districts.

SURVEY METHOD

Sixteen sampling points (Fig. 1) were located in and about the defoliation area on the Greenbrier and Marlinton Ranger Districts. At each sampling point two 30" branch cuttings were taken from opposite sides of the lower crown of three nearby trees 8-15" dbh.

fig. 1


5
6
4
250
1
2
3
BARTOW
GEORGE
WASHINGTON
NATIONAL FOREST
WEST
VIRGINIA
MONONGAHELA
NF
7
GREENBRIER
RANGER DISTRICT
8
FS-1
28
9
SAMPLING AREA
GREENBANK
10
WEST VIRGINIA
VIRGINIA
CASS
11
12
13
14
FROST
84
MARLINTON
16
15
28
FS-11
OAK LEAF TIER EGG SAMPLING POINTS 1968
AND PREDICTED DEFOLIATION 1969
MONONGAHELA NATIONAL FOREST
LEGEND
SCALE 1/4"=1mile
0 1 2 3 4 Mi.
DEGREE OF DEFOLIATION
NEGLIGIBLE
MODERATE
LIGHT
HEAVY

SURVEY METHOD (cont)

Egg survey data from the Monongahela National Forest was modified [1] so that a sampling design developed by the Southeastern Area Forest Pest Control group (Ciesla 1968) for the George Washington National Forest could be employed in making defoliation predictions for 1968. Predictions for degree of defoliation at various sampling points were obtained on the basis of the mean number of eggs per 15-inch branch sample at each plot (Table 1).

Table 1. Correlation of mean number of C. semipurpurana eggs per 15-inch branch sample and predicted defoliation.[2]

Mean No. Eggs per 15-inch branch sample	Predicted Defoliation	
0 - 1.5	Negligible	0-5%
1.6 - 8.0	Light	6-25%
8.1 - 28.2	Moderate	26-75%
28.3 +	Heavy	76% +

RESULTS

Scattered negligible to heavy defoliation is predicted for 175,000 acres on the Greenbrier and Marlinton Ranger Districts (Table 2). This table gives the mean oak leaf tier eggs per 15-inch branch sample along with the defoliation expected at the given sampling site in 1969.

There are six sampling points each where defoliation is expected to be moderate (26-75%) or heavy (over 76%). At the other four points defoliation is expected to be negligible to light (0-25%).

---

1 Counts indicated that egg distribution is consistent along a 30" branch sample; thus, a direct conversion of data to 15" branch counts was made.

2 Adopted from a Southeastern Area Forest Pest Control report (Ciesla 1968).

DISCUSSION

Assuming that the oak leaf tier outbreak continues, varying degrees of defoliation will occur within the area. Past experience with the pest indicates that scarlet oak is the preferred host with northern red and black oaks usually receiving less severe defoliation in an outbreak area (Gillespie 1956). As mentioned earlier in this report, extensive oak mortality can occur if leaf tier defoliation is coupled with adverse environmental factors.

The predicted negligible to light defoliation at plots 4 and 5 is a result of a difference in species composition from that of the red oak type. Interpretation of the map (Fig. 1) indicates that plots of the various degrees of defoliation are intermingled and patterns are not discernible.

RECOMMENDATIONS

1. Forest personnel be on the lookout for increased incidence of dieback and mortality in their defoliated stands.

2. Forest Pest Control personnel re-survey outbreak area in the spring of 1969.

REFERENCES CITED

Ciesla, W. M., et.al. 1968. Evaluation and Status of a Leaf Tier, Croesia semipurpurana on the James River District, George Washington National Forest, Virginia. Asheville Pest Control Office, Rpt. 69-1-Z.

Gillespie, W. H. 1956. Recent Extensive Mortality of Scarlet Oak in West Virginia, Plant Disease Reporter, West Virginia Department of Agriculture, Vol. 40, No. 12.

Gillespie, W. H. 1966. Oak Mortality Survey of the Monongahela National Forest, West Virginia Department of Agriculture, Pest Control Service.

Freeman, W. L. 1966. A Biological Evaluation of the Oak Leaf Tier, Croesia semipurpurana Kearfott, on the Monongahela National Forest, Delaware Pest Control Office. Rpt. 66-CZ-7.

White, W. B. 1968. Aerial Detection Survey Monongahela National Forest, Delaware Pest Control Office. Rpt. D-68-8.

Table 2. Oak Leaf Tier Egg Counts and Defoliation Predictions for the Greenbrier and Marlinton Ranger Districts, Monongahela National Forest 1969.

Plot No.	Mean Eggs per 15" branch sample	Predicted Defoliation
1	112.1	Heavy
2	16.7	Moderate
3	64.3	Heavy
4	2.4	Light
5	.1	Negligible
6	11.2	Moderate
7	27.8	Moderate
8	56.2	Heavy
9	.02	Negligible
10	1	Negligible
11	25.7	Moderate
12	82.3	Heavy
13	22.3	Moderate
14	30.1	Heavy
15	39.9	Heavy
16	15.6	Moderate